Amendments to the Claims:

The listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

Claim 1.   (Original)   A method of simulating and optimizing qualification testing of lubricating oil products, the method comprising:

    a.   passing a plurality of lubricating oil product characteristics to a simulator engine, wherein the simulator engine comprises a plurality of simulated qualification tests and processing the lubricating oil product characteristics in one or more of the simulated qualification tests, wherein the output of each simulated qualification test includes a probability of passing indicator for indicating the probability that a lubricating oil product have the inputted characteristics would pass an actual qualification test;

    b.   passing an input of the plurality of lubricating oil product characteristics, the probability of passing indicator from each simulated qualification test, and a proposed test sequence of a plurality of qualification tests to a strategy simulator engine and processing the input to determine a probability of passing indicator, cost and time duration of the proposed test sequence.

Claim 2.   (Original)   The method of claim 1, further comprising passing as a second input the plurality of lubricating oil product characteristics, the proposed test sequence and the probability of passing indicator from each simulated qualification test to an strategy optimizer engine and processing the second input

to determine an optimum test sequence, based on pre-determined criteria, for performing actual qualification tests.

Claim 3.   (Original)   The method of claim 2, wherein the strategy optimizer engine utilizes optimizing techniques selected from genetic algorithms, simulated annealing, and mixtures thereof.

Claim 4.   (Original)   The method of claim 2, wherein the pre-determined criteria comprise test sequence cost and test sequence time duration.

Claim 5.   (Original)   The method of claim 2, wherein the simulator engine is configured to account for a random factor for each simulated qualification test.

Claim 6.   (Original)   The method of claim 1, wherein the simulated qualification tests are modeled using as a third input data from actual qualification tests with modeling techniques selected from neural networks, Bayesian network, and mixtures thereof.

Claim 7.   (Original)   The method of claim 6, wherein the third input further comprises data from expert knowledge and wherein the modeling technique is the Bayesian network modeling technique.

Claim 8.   (Original)   The method of claim 1, wherein the lubricating oil product characteristics comprise base oil percentage and characteristics, viscosity index improver percentage and characteristics, additives percentage and characteristics, and pour point depressants percentage and characteristics.

Claim 9.   (Original)   The method of claim 1, wherein the strategy simulator engine utilizes Monte Carlo statistical techniques.

Claim 10.   (Original)   The method of claim 9, wherein the strategy simulator engine is configured to operate in series or in parallel on the individual simulated qualification tests of the test sequence.

Claim 11.   (Original)   The method of claim 1, wherein the strategy simulator engine is configured to change the characteristics of the lubricating oil product under test in a manner consistent with a pre-determined Codes of Practice for lubricant oil testing where the initial characteristics would not result in the lubricating oil product passing all qualification tests.

Claim 12.   (Original)   The method of claim 10, wherein the pre-determined Codes of Practice comprise permissible mid-test sequence changes of the characteristics of the lubricating oil product under test and permissible multi-grade tests.

Claim 13.   (Original)   The method of claim 9, wherein the strategy simulator engine is configured to produce an output for a plurality of variations of lubricating oil product characteristics.

Claim 14.   (Original)   The method of claim 8, wherein Codes of Practice are entered into the strategy simulator engine via a Rules Engine.

Claim 15.   (Original)   The method of claim 9, wherein the Rules Engine is configured and adapted to accept Rules of Practice input via a plain-English interface, and wherein the Rules Engine processes the input into a computer programming language format which provides instructions which the strategy simulator engine can read and follow.

Claim 16.   (Original)   A system for simulating and optimizing qualification testing of lubricating oil products, the system comprising:

a.   a CPU;

b.   a memory operatively connected to the CPU, the memory containing a program adapted to be executed by the CPU and the CPU and memory cooperatively adapted for simulating qualification testing of lubricating oil products;

c.   a simulator engine code segment embodied on a computer-readable medium configured and adapted for receiving as input a plurality of lubricating oil product characteristics, wherein the simulator engine comprises a plurality of simulated qualification test code segments, and configured and adapted for processing the input of lubricating oil product characteristics in one or more of the simulated qualification test code segments, wherein the output of each simulated qualification test code segments includes a probability of passing indicator for indicating the probability that a lubricating oil product have the inputted characteristics would pass an actual qualification test;

d.   a strategy simulator code segment embodied on a computer-readable medium configured and adapted for receiving as a second input the plurality of lubricating oil product characteristics, the probability of passing indicator from each simulated qualification test code segment, the plurality of lubricating oil product characteristics, and a proposed test sequence of a plurality of qualification tests, and processing the second input to determine a probability of passing indicator, cost and time duration of the proposed test sequence.

Claim 17.   (Original)   The system of claim 16, further comprising a strategy optimizer engine code segment embodied on a computer-readable medium configured and adapted for receiving as a third input an initial test sequence, the plurality of lubricating oil product characteristics, and the probability of passing indicator from each simulated qualification test, and processing the third input to

determine an optimum test sequence, based on pre-determined criteria, for performing actual qualification tests.

Claim 18.   (Original)   The system of claim 17, wherein the strategy optimizer engine code segment utilizes optimizing techniques selected from genetic algorithms, simulated annealing, and mixtures thereof.

Claim 19.   (Original)   The system of claim 17, wherein the pre-determined criteria comprise test sequence cost and test sequence time duration.

Claim 20.   (Original)   The system of claim 17, wherein the strategy optimizer engine code segment is configured and adapted to account for a random factor for each simulated qualification test.

Claim 21.   (Original)   The system of claim 16, wherein the simulated qualification test code segments are constructed from a fourth input of data from a database of actual qualification tests with modeling techniques selected from neural networks, Bayesian network, and mixtures thereof.

Claim 22.   (Original)   The system of claim 21, wherein the fourth input further comprises data from a database of expert knowledge and wherein the modeling technique is the Bayesian network modeling technique.

Claim 23.   (Original)   The system of claim 16, wherein the input of lubricating oil product characteristics comprises base oil percentage and characteristics, viscosity index improver percentage and characteristics, additives percentage and characteristics, and pour point depressants percentage and characteristics.

Claim 24.   (Original)   The system of claim 16, wherein the strategy simulator engine code segment is constructed from Monte Carlo statistical techniques.

Claim 25.   (Original)   The system of claim 24, wherein the strategy simulator engine code segment is configured and adapted to process in series or in parallel the input of individual simulated qualification tests of the test sequence.

Claim 26.   (Original)   The system of claim 16, wherein the strategy simulator engine code segment is configured and adapted to change the characteristics of the lubricating oil product under test in a manner consistent with a pre-determined Codes of Practice for lubricant oil testing where the initial characteristics would not result in the lubricating oil product passing all qualification tests.

Claim 27.   (Original)   The system of claim 26, wherein the pre-determined Codes of Practice comprise permissible mid-test sequence changes of the characteristics of the lubricating oil product under test and permissible multi-grade tests.

Claim 28.   (Original)   The system of claim 26, wherein the strategy simulator engine code segment is configured and adapted to produce an output of a plurality of variations of lubricating oil product characteristics.

Claim 29.   (Original)   The system of claim 26, further comprising a Rules Engine code segment for incorporating the Codes of Practice into the strategy simulator engine.

Claim 30.   (Original)   The system of claim 26, wherein the Rules Engine code segment is configured and adapted to accept Codes of Practice input via a plain-English interface, and wherein the Rules Engine code segment translates the input into a computer programming language code segment configured and adapted provides instructions which the strategy simulator engine segment can read and follow.